THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

# October 1998

Barricading Black Knight 207

**An OinC's Worst** 

The Big Uglies



#### AUUFUNCII CONTENTS

October 1998 The Naval Safety Center's Volume 43, Number 10 Aviation Magazine

On the cover Flight-Deck Montage. Photographers: PH2 Matthew J. Thomas, PH3 Jeffrey S. Viano, PHAN Jason Dent, and PHAN Neil H.F. Sheinbaum

RAdm. R.E. Besal Commander, Naval Safety Center
Bill Mooberry Executive Director
John G. Mahoney Head, Media and Education Support
Derek Nelson Editor-in-Chief
LCdr. Mark Enderson Head, Aviation Division

Approach Staff
Peter Mersky Editor
Laurinda Minke Design and Layout
John W. Williams Illustrator

Comments and Commander, Naval Safety Center Attn: Approach, Code 71 375 A St., Norfolk, VA 23511-4399 [757] 444-3520 Ext. 7245 e-mail: pmersky@safecen.navy.mil

Distribution Ginger Rives e-mail: vrives@safecen.navy.mil

Homepage address www.norfolk.navy.mil/safecen NAVSAFECEN BBS (757) 444-7927/5857/5092 DSN 564

Postmaster Send address changes to Approach, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399.

Approach (ISSN 1094-0405) is published portably by the Commander, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399, proach contents should not be considered directive and may not be construed as imministing under Article 31 of the Uniform Code of Military Justice, Views expressed in set-written articles are not necessarily those of the Naval Safety Center, Approach is illable for sale by the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 250-7954. Subscription price: \$33 per year. Telephone credit card orders can be made 8 to 4 p.m. Eastern time at (202) 512-1800. Periodicals postage paid at Norfolk, VA and titional mailing offices.



#### articles

#### **Barricading Black** Knight 207

Capt. Scott Slater

A hung nosegear and low fuel sets this Hornet driver up for a tough recovery.

#### From the Ship's Side

Cdr. Kelly E. McCoy

The Air Boss gives the carrier's view of Black Knight 207's return.

#### Black-Hole Nightmare

LCdr. J. Ric McCarthy

An OinC's worst dream: losing a helo. But the crew survived.

#### **Hidden Dangers**

ATC Mike L. Hott

Three grapes in the shadows nearly go for a ride.

#### A-6 in the Landing Area! Fouled Deck!

LCdr. Mike Barger

As its pilot waves off, a Hornet clips an Intruder on the flight deck.

#### EBRC? What's That?

Lt. Jack Van Natta

Confusion over a course change could have led to midairs.

#### The Big Uglies

LCdr. David J. Silkey

Rain and overburdened aviators provide a busy time on the platform.

#### Spectres, **Turbo-Tormentors** and Goat-Ropes

Lt. Jeffrey B. Barta

Did a TH-57 just crash? Lots of folks get into the SAR act.



Who Caught the Flap Lever? Not Me!

Lt. Mark Light

Loose sleeves hang up on the controls during a launch.

Flames on Final Lt. George M. Perry

When a hydraulic pump explodes on launch, this F-14 crew has to deal with an in-flight fire as they struggle to recover.

How to Hover a Prowler Lt. John Sheehan A pitching deck contributes to an ugly recovery.

We apologize for the delay of this issue. Our printing contract was awarded to another printer for the coming year, requiring transferring postal permits, which took more time. Hopefully, our schedule will return to normal.-Ed.

#### Air Wing:

Centerspread Pullout

- Pop-ups
- New Flight-Mishap Videos
- HABD Replaces HEED
- New Cold-Weather Gear
- New GPWS Warns Pilots Before CFIT

Bravo Zulu

- VMGR-152
- VFA-106
- HMM-264(REIN)

Letters



was FLYING AN FA-18C HORNET in the Persian Gulf when an airborne-intercept training hop quickly became a potential catastrophe. With my nosegear hung in the up position, my airborne refueling probe stowed, and the No. 2 hydraulic system failed. I found myself in an extremely dangerous situation and no easy way out, wondering if I would run out of fuel before I got to the ramp. Here's what led to my predicament.

After an uneventful flight, lead and I had entered the low-holding pattern overhead the ship awaiting our charlie time. As we began our descent, we turned on our fuel dumps to get down to landing weight. A minute or so later, I secured my dumps and checked my mirrors to confirm that fuel had stopped venting.

Upon entering the pattern, the flight lead realized we would need more spacing between our flight and the jets in front of us, so he elected to spin it. After 360 degrees of turn, we were in the correct position to break. He kissed me off and began his level, 180-degree turn to

approach the ship for landing. I counted the standard 17 seconds and began my turn behind him. My fuel state was 3.7, roughly 30 minutes of fuel remaining.

As I rolled out on the downwind leg of my approach, I lowered my landing-gear handle and placed my flap-position switch to "full." Immediately, I had the first indication that something was wrong. I heard the aural warning tone in my helmet and simultaneously noticed a HYD2A caution on the digital display. Several seconds later, my fears were confirmed when none of my landing gear indicated down-and-locked. The No. 2 hydraulic system in the FA-18 provides the necessary pressure for normal gear extension. Initially, the HYD2 needle on the hydraulic gauge indicated normal. However, within the next 30 seconds, the needle began fluctuating, which indicated that the system had a leak and would soon run dry.

I told lead I had a landing gear problem and needed him to remain airborne to inspect the gear. He began climbing, and I joined him

# Barrigading Dek Knight

from the inside of the turn. We told the carrier about the problem, and I was instructed to switch to another frequency to talk to an FA-18 rep.

My flight lead confirmed that none of my gear was down. I explained my cockpit indications to the rep, and we quickly followed NATOPS procedures. After checking circuit breakers and testing warning lights, we tried to extend the gear by emergency procedures, which resulted in my left main gear indicating down-and-locked. This procedure also produced dense smoke and toxic fumes in my cockpit because hydraulic fluid was leaking into my bleed-air system.

Next, I tried lowering the right main gear and nosegear with positive and negative G's. These maneuvers resulted in a down-and-locked indication for my right main gear. With only my nosegear unsafe, I tried more positive and negative G, including yawing the aircraft.

No luck.

With fuel quickly becoming a factor, I tried an emergency refueling-probe extension. I had already used my reserve reservoir of pressure to extend the gear, so I was not surprised when this attempt failed.

At approximately the same time, I requested the dirty bingo fuel to get to the

With no divert available and air-borne refueling not an option, the deck began to rig the barricade. I knew that a Hornet had never done this...

nearest divert airfield. It was 4.1, and at this point my fuel quantity was 2.6.

With no divert available and airborne refueling not an option, the deck began to rig the barricade. I knew that a Hornet had never done this. Needless to say, I was not thrilled to be the first to try it.

As I extended downwind to give the ship time to rig the barricade, I jettisoned both empty drop tanks, a Rockeye and two AIM-120 AMRAAMs. Back on tower frequency now, CAG paddles briefed me on a barricade landing. In the background, I could hear the chaos on the flight deck, but I knew my job was to compartmentalize and focus on flying the jet. I couldn't let anxiety affect my performance.

As I turned in for final approach at 10 miles, the LSO asked me what the gross weight of the aircraft indicated. I replied 30,000 pounds, including 1,300 pounds of fuel. I knew this approach needed to be very smooth to put the aircraft in the window for a safe barricade, so I concentrated on flying an "on and on" start.

I intercepted the glideslope at approximately four miles and began my descent. Everything was looking good, then the LSO said I had to make a 360 for time. The deck wasn't ready. The fuel gauge indicated 360 pounds of fuel in my No. 3 feed tank, which is the tank that provides fuel to the right engine. As I began the turn, I moved my flaps to half. This not only saved fuel, it also configured the jet for a single-engine approach.

After a lazy 360, I focused on finding course and glideslope again. The ILS was up, and although my No. 3 feed tank now indicated 150 pounds, I was inbound to land momentarily.

At approximately 1.5 miles, the LSO told me to make another 360. I could hear the disappointment in my own voice as I acknowledged the call.

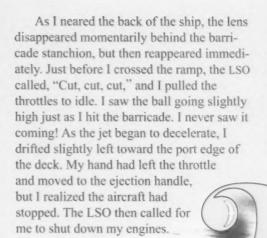
Circling now at 800 feet or so, two miles from the ship, I watched the fuel quantity in my No. 3 feed tank drop to zero. I knew that a fuel cross-over valve should continue to fuel the right engine from the No. 2 feed tank, but I had never been in a situation in which I depended on it to work. I knew the 600 pounds in my No. 2 tank would only last several minutes, whether it was feeding two engines or one!

I rolled out on course and glideslope now for the third time and, at three-quarters of a mile, called the ball. The LSO rogered and called the winds. Moments later, I heard an aural caution... the kind an FA-18 pilot hears when the system finds some sort of new problem.

Obviously, I was afraid I had lost an engine. When I looked into my cockpit to check my caution panel, I had three rows of cautions. Now my attention was inside the cockpit instead of on flying the approach. All of this occurred within seconds, and the LSO told me to wave off.

As I made a climbing left turn, I saw that both of my engines were still running. I was so disappointed to think that I could already be safely aboard. Knowing I had only a minute or so of fuel left, I leveled off at pattern altitude and kept the aircraft in a steep left turn. At the 135, I radioed that I had 300 pounds of fuel remaining.

The steep turn left me without much groove length as I approached the back of the ship for the last time. Normally, paddles would not have enjoyed seeing me high coming down, wrapped up, and short in the groove, but today it was our only chance. Rolling out well inside a normal start, I called the ball. The silence was thick with tension as I focused on flying the pass. On glideslope and centerline, I purposely kept the airspeed roughly 10 knots faster than on-speed, essentially flying the ball with the nose.



As I sat in my jet following the landing, I didn't know what to do. Nothing was on fire or burning, and the Sailors and Marines on the deck just looked at me in bewilderment. After allowing myself a big sigh of relief, I engaged the safety handle on the ejection seat and raised the canopy with battery power. It was a great feeling to climb out of the jet without assistance. It was over!

Capt. Slater flew with VMFA-314.

As the jet began to decelerate,
I drifted slightly left toward
the port edge of the deck.
My hand had left the
throttle and moved to
the ejection handle...

### From the Ship's Side

#### by Cdr. Kelly E. McCoy

HERE WERE FOUR AIRCRAFT in the air—207, 205, a Prowler and an S-3B tanker. Our primary concern was 207. With time becoming a factor, I told Black Knight 205 to recover. The Prowler and Viking had plenty of gas, and were extended until the next recovery.

We couldn't prepare the barricade until 205 trapped. After he did, the deck crew stripped the four arresting wires. With the 3-wire and 4-wire removed, we brought Tilly, the 130,000-pound crash crane, into position near the rollout area abeam the island. We also raised the JBDs for cats 1 and 2 to protect the many aircraft on the bow.

More than 100 deck-crew and air-wing members waited along the starboard foul line as we called, "Rig the barricade! This is not a drill!" over the 5MC.

The crew positioned and locked the 13 deck plates, and hooked the tractor up to pull the rig from the storeroom. Things were going well until the rig caught the hatch dog, breaking the tow rope. The crew quickly cleared the snarl, reconnected the rope and started pulling the barricade across the landing area. But we had lost two valuable minutes.

As the flight-deck crew raced the clock, Black Knight 207's pilot kept trying to get his hung nosegear down, which cost him precious fuel. Then, 10 miles behind the ship, with 1,300 pounds of fuel, and one minute before my 5MC call, he began his straight-in approach. At two miles, the LSO waved him off because the rig wasn't ready.

Black Knight 207 made a 360, and was down to 1,000 pounds of fuel, enough for seven more minutes before flameout. A minute later, the rig was out on deck and the last two CDPs removed.

The rig master took charge and directed the 100-plus people in erecting the barricade.

They connected the upper and lower port terminals, then the riggers pulled the barricade toward the starboard side to connect the load straps. The tensioning phase now began. A pneumatic wrench powered by low-pressure air was supposed to tighten the straps, but the wrench for the lower load-strap ruptured before it was fully tensioned, and there was no backup hose available. Fortunately, the lower load-strap was tight enough to remain in place under the deck plates. The barricade CDP was then put into battery.

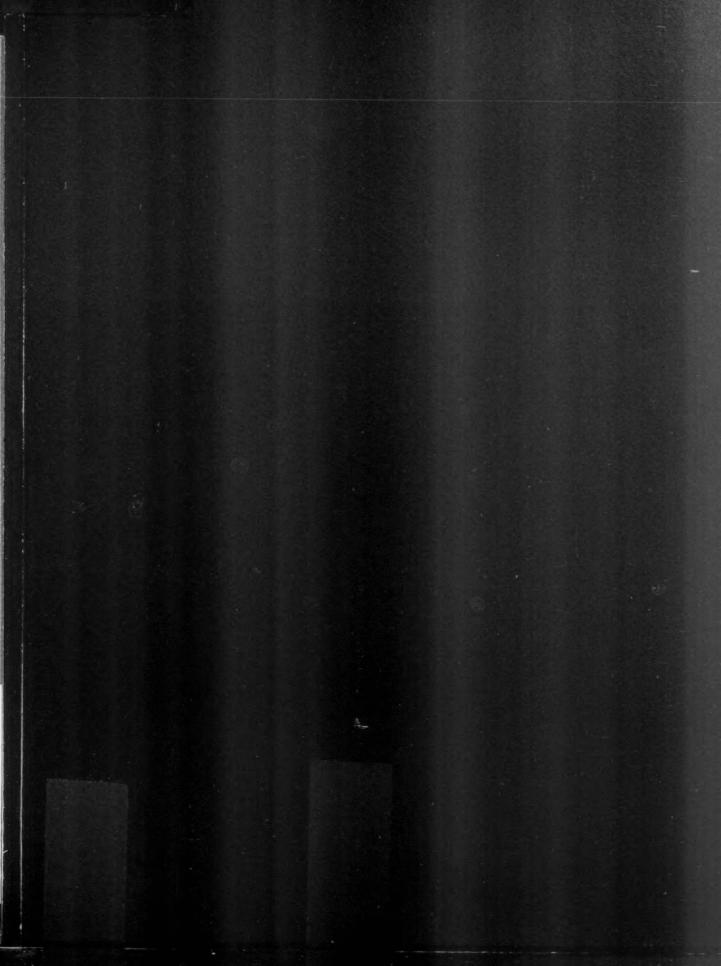
The Hornet made another 360 one mile from the ship, as the pilot reported 710 pounds on the gauge—four minutes left. He completed his turn as the crew raised the barricade. With a green deck, the crew cleared the landing area. Black Knight 207 began his approach. At half a mile, his right engine sputtered, and he waved it off in close because he was out of position to engage the barricade. The situation was critical. He had 300 pounds and was halfway through his turn to the next approach. No one, including the pilot, knew if he had enough fuel to complete the approach. We all held our collective breath as the aircraft completed the turn, rolled wings level, and engaged the barricade.

The pilot quickly secured his engines as the flight-deck emergency response team helped him shut down and get out of the plane. His fuel gauge showed 100 pounds of fuel remaining.

The deck crew hooked Tilly to the Hornet and removed it from the landing area. Twenty-five minutes after 207 recovered, we were

operating again.

Cdr. Kelly is the Air Boss aboard USS Nimitz (CVN 68







Later that evening, the next day's flight schedule was being routed. Managing the flight hours and trying to meet all the other taskings, the XO sat on the schedule. He was from the minesweeper navy (and therefore new to LAMPS and shipboard aviation), so he questioned the amount of rest I required for all of my aircrew. I cited the requirements written both in blood and books and used one of my silver bullets to hold to my schedule. Although the chances are small, if we ever had to stand at the end of the long green table, we had to be ready to answer why our crew wasn't well-rested.

The issue was resolved, at least for the moment. Little did either of us know that one of our aircraft had just hit the water.

I moved the schedule issue to the CO's stateroom, laying out the flight plan's possibilities and vulnerabilities to him. While we

E'D BEGUN OUR SIX-MONTH deployment to the Arabian Gulf. During a fueling stop at Djibouti, our sister ship's LAMPS OinC and I discussed the rigid-hulled inflatable boat (RHIB) and its crew, a key element in rescues during flight quarters. The RHIB crews seemed

talked, combat reported that it had lost contact with Cutlass 475 10 minutes earlier. Perhaps my pilots were playing hide-and-seek with combat and winning for the moment.

The CO and I decided to visit combat. The crew had last reported they were inbound to investigate a contact they thought was in distress. We reached the ASTAC's console that had been controlling the aircraft — still no contact. The CO looked worried.

"It's been twenty minutes," he said. I glanced at my watch. It had been closer to 15 minutes actually. I made a mental note to modify my det SOP so that I wouldn't feel so uncomfortable with "lost contact."

Time ticked by, and we started calling on 243.0 and 121.5. I left the CIC for the flight deck on this darkest of nights, hoping for a glimpse of the aircraft strobes in the distance.

I returned to CIC. The captain had ordered his ship to head for the last reported position. Both ships diverted from their intended courses and built to flank speed. I moved to the bridge, becoming numb with disbelief. From the bridge I spotted a red light that seemed to be on the nearly invisible horizon. Still in denial, I thought it was a ship just cresting the earth's edge.

I mustered my remaining pilots from the detachment to see if they had any options I might not have considered. We told the bridge watchstanders what survival flares looked like. Another pilot quietly started knocking off the dust on the det's mishap binder. It had been 30 minutes and all eyes were on the horizon. The red light I'd seen earlier had lasted about as long as a flare.

The ships closed at 32 knots, side by side; the boat decks were manned and ready. Our sister detachment readied for flight as their 45-minute alert passed quickly to a 15-minute ready status. I recommended keeping our second aircraft clear of the deck in event a false alarm ended this nightmare.

Broken English over channel 16 bridge-to-bridge confirmed our fears: "I position to survivors." It had happened! The flares soon appeared in the water as both warships rapidly closed the merchant vessel now on station. Ironically, this ship was the same one Cutlass 475 had been trying to help, though it no longer appeared in distress.

Our warship formation rapidly came to full stop, surrounding the merchant. I called for lights, trying to locate the helmets. We saw one helmet, then two, as the night sky lit up with all three ships' search lights sweeping the darkness.

Finally, we spotted all three survivors, and the other ship's RHIB hit the water in less than five minutes from all stop. The tension on the bridge eased as the merchant vessel obliged our request to leave the area.

With the RHIB next to the survivors, silence fell for what seemed an eternity, waiting for the first report. Over VHF, we heard the report: three survivors, one with possible back injuries, two on board. I was still worried about the injured crewman. I had already dismissed the helicopter as a mere piece of rotary equipment.

Once a precautionary stretcher was rigged, the third was pulled from the sea. With all three crewmen safely on board, we decided to return the pilots to our ship that evening using "Magnum Air Service" from our sister ship. We left the slightly injured aircrewmen for medical evaluation and one less helo flight this night.

The night when Cutlass 475 and its crew struck the waters off the coast of Yemen, was a very real situation seen frequently by LAMPS crews. Following a solemn couple of days and nights, having our vulnerabilities so well-exposed, the detachment took a close look at the way we do business.

Most of us find it easy to visualize this situation happening during our flights. Deployed in support of shipping surveillance, most of us have had our own close calls. We brief vertigo and disorientation daily and the danger of flying over the water.

LAMPS offers the flexibility and sensors needed to assemble the tactical picture by our ships both day and night. To carry out this mission, we must sense three-dimensional motion, which is most pronounced in slow or hovering flight. The "Black Hole" phenomenon is well-known to LAMPS pilots as they approach the small deck of a destroyer or frigate. As airspeed decreases below single-engine flight capability, power requirements increase. Scans tend to be drawn outside to the deck. Not immediately sensing the need for more power, the pilot can let the aircraft settle the 20 to 60 feet to the water. The water surface is next to invisible because the pilot has been scanning the brightly lit ship.

As a community, we use the "alternate approach," which establishes a steady deceleration while at a fixed altitude of 100 feet AGL. This procedure lets us avoid having to fly a glide slope with minimal visual cues.

Concerned for the "Black Hole" while we're approaching low and slow to the water, we still must identify surface contacts to do our job, as was the case this night. The Cutlass crew was overburdened with a merchant ship's distress call. The merchant appeared to be listing and displaying lights that seemed to be asking for help. All members of the crew did their best to prepare the aircraft for a visual identification, enabling them to better assess the situation. Crew coordination seemed to be breaking down at this point.

Hitting the water had moved down the priority list of concerns. The HAC began his descent from 1,000 feet, as he had many times before. The copilot, relaying the situation to his ship, worked at completing the checklist for an automatic or computer approach, leaving the crewman to radar-fix the contact and look from his side window for the dark, looming ship. Descending through both the preset signals and pilot-adjustable signals of radar altimeter warnings, the crew never saw the danger in time. It was a gentle landing; I still wonder how near the pilot was to making this one just a close call.

LCdr. McCarthy was HSL-46 Det 8 OinC.

See "The Anatomy of a Black-Hole Approach to a Frigate Deck" (Sep-Oct '97).

It had been 30 minutes and all eyes were on the horizon. The red light I'd seen earlier had lasted about a long as a flare. October 1998 approach

## Hidden

I ran around the side and shined my flashlight. I was horrified to see three grapes standing by the aircraft with the hose still-connected.

#### by ATC Mike L. Hott

HE NIGHT WAS DARK AND NASTY as we headed across the Atlantic for our deployment. Our SH-60F had returned earlier than scheduled for a hot refuel and crew swap. I had both my duty LSEs in daily and turnaround checks in the helo hole by the island. I sent an AT3 troubleshooter, a qualified LSE, to recover the aircraft and monitor the crew switch and refueling.

After the helicopter landed, I thought how strange it looked in the sodium-vapor flight-deck lighting, like it was sitting on the edge of darkness. The refueling began, and the crew changed. The left-seat pilot swapped first. Soon the call came for an AT troubleshooter to look at an IFF gripe. I called my AD1 troubleshooter, also a qualified LSE, to replace the AT3 so the third-class could investigate the gripe.

I asked the first-class how he felt about taking over as LSE. Although he was qualified, he hadn't done it for a while. He said he was comfortable with the job.

The IFF gripe was quickly taken care of, and I had the AT3 return to the LSE position as he was more current than the AD1.

A short time later, the aircraft position lights went steady, a signal the crew was ready to launch. The LSE asked Primary for permission to break down the chocks and chains. Primary gave the go-ahead, and the LSE signaled the brownshirts to break it down. The chock-and-chain runner on the right side of the helo quickly retrieved those items and waited anxiously for his counterpart to join him.

At about this time, I noticed the portside runner, out front, frantically signaling
the LSE. I ran around the
side and shined my flashlight. I was horrified to
see three grapes standing
by the aircraft with the hose
still connected. They removed
the hose, and the Seahawk
launched without further incident.

We were fortunate that we broke the chain. After talking with the pilots later, we agreed we had averted a serious mishap. We concluded that the simultaneous crew-swap, LSE swap, and refueling led to a breakdown in communica-

# Dangers

tion and situational awareness all around.

The left-seat pilot had signaled the AD1 LSE to cut fuel shortly after switching with the previous crew. The LSE passed the signal, and the pilot noted the fuel increase had stopped, most likely because of the aircraft high-level shutoffs. But the hose remained charged, and the fuel crew remained by the aircraft.

Given the flight-deck lighting and the drizzle, the pilot in the left seat could not see the people standing in the shadows. The new crewmen also didn't notice the fuelers by the helicopter. The chock-and-chain runner said he didn't see the fuelers until he was right on top of them.

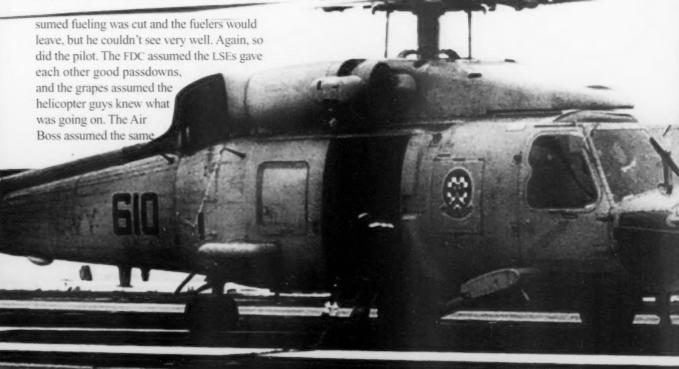
We had a lot of assumptions here. The LSE assumed the fueling crew saw the signal to stop the fuel; so did the pilot. The LSO as-

Here are a few contributing factors:

- The port side of the helo was completely in the dark, and the drizzle also helped hide the activity on the deck.
- The Seahawk and the darkness hid the scene from primary flight control.
- FDC failed to ensure that when he swapped LSEs that they briefed each other on what was happening.
- Everyone assumed everyone else knew that they were doing.

Nothing is routine, not even a familiar activity. If you have to swap, wait until the other things are complete. Monitor everything that's going on. My people are professionals, but no one is perfect.

ATC Hott is a flight-deck coordinator with HS-15.



# A-6 in the Landing Area!

by LCdr. Mike Barger

Was Dust Finished Dropping Four GBU-16s on Avgo Nisi target in the Mediterranean Sea, and my division of Hornets was returning to the ship for an early evening, Case I recovery. I was Dash 3 in a four-ship of relatively experienced pilots. The weather was typical for summer in the Med—plenty of humidity, which significantly restricted visibility, and a thin scud layer at about 1,000 feet. The carrier was, of course, steaming directly into the European sunset.

As we established ourselves in the overhead stack awaiting recovery time, we noticed that vertical visibility was not bad, allowing us to see the ship fairly well from 3,000 feet. Unfortunately, we were having a terrible time keeping track of our fellow aircrew overhead the CV; horizontal visibility was severely degraded, especially when looking toward the sunset. There was a good bit of chatter on the tactical frequency about why we were remaining Case I, but ultimately, there were no hard recommendations for a transition to Case II or Case III procedures. Using low-visibility calls to facilitate the recovery, we gradually made our way to the bottom of the stack, toward the initial.

As we approached the overhead in standard right echelon, my division lead decided we wouldn't be able to take all four aircraft into the break. He decided to spin two of us but, in non-standard fashion, it was lead and his wingman who did the spin, pressing me and my wingman into the pattern.

I immediately asked the tower to call my interval as I couldn't see any traffic downwind because of the haze and the setting sun. About one mile upwind, the Mini Boss (as the senior man in primary flight control) told me my interval was at my nine o'clock. I still couldn't see the traffic, so I started timing. After 20 seconds, I turned downwind myself.

Approaching the abeam position, I still couldn't see the ship, so I continued the approach on instruments. At the ninety position, I gave the LSOs a "clara at the ninety" call to get some early help with the approach. Meanwhile, an A-6 (my interval) had trapped and gotten his hook seriously tangled in the 4-wire during its retraction. This situation created two separate micro-emergencies—an aircraft at the ninety unable to see the ship and an aircraft on deck unable to clear the landing area in time for the next arrestment. As these events took place simultaneously, the recovery personnel focused on one of two locations: at me in the final stages of my approach turn or at the A-6 in the landing area. All of the LSOs were looking at me, and all of the tower personnel were looking at the aircraft fouling the deck. Not one person in the tower or on the LSO platform had the big picture of the impending disaster.

As I rolled into the groove, still clara, the A-6 crew again tried unsuccessfully to clear the landing area. The sound of the brief, unproductive rpm increase from the Intruder was enough to make the LSOs believe that the landing area was being cleared and that the deck-status



lights remained red, awaiting the retraction of the 4-wire. The trooper on the LSO platform continued to call, "Fouled deck." The deck-status lights remained red, and the two LSOs with pickles held them high over their heads to acknowledge the deck status. No one on the LSO platform, however, visually confirmed why the deck remained fouled.

The LSOs were focused on talking me aboard.

"You're lined up left," they called as I neared the "in the middle" position of the pass. "Call the ball when you've got it."

"Ball, clara line-up," I responded, now nearing the in-close position.

"You're lined up left, a little power, wave off, fouled deck." replied the controlling LSO calmly. I knew I was close to the landing area, although I still couldn't see anything but a big gray shadow where the carrier was

supposed to be. As I selected military power to wave off, I was most concerned about over-rotating and an inflight engagement because I felt very close to the ship. As my scan transitioned to my velocity vector and AOA bracket for proper wave-off technique, my heart jumped into my throat because of what I saw in my HUD.

As the LSOs gave me the "wave off, fouled deck" call, the A-6 in front of me had just become untangled from the CDP and started to clear the landing area. Because of the reduced visibility, I couldn't see the Intruder when it was pointed down the angle. But when it turned to taxi there was no mistaking the fact that I was going to hit it on the waveoff.

I saw the A-6 about three seconds before I hit it, about the same time that the LSOs realized that the fouled deck was for the Intruder, not for an unset arresting wire. I pulled back on the stick, over-rotating. I

13

thought for a moment that the tail of the A-6 might even strike my windscreen, and I ducked my head to the left behind the instrument panel. I tensed my muscles and braced for the impact.

As I struck the A-6, I felt a fairly significant jolt and grabbed the ejection handle with my left hand. I lifted my head (after perhaps one full second behind the instrument panel) to a series of five or six loud bangs as my left engine had ingested almost the entire upper third of the Intruder's tail. The engine rpm immediately indicated zero and an "engine-left, engine-left" warning blared in my helmet. The jet was in about a 30-degree AOB to the left, but somehow, I was still flying.

As I moved the stick to level my wings, with my left hand still clinging to the ejection handle, the aircraft responded and I initiated my climb away from the deck. My right throttle was already at military power from the initial waveoff command, but the condition of that engine was still uncertain. I could only generate a single-engine climb rate of about 50 fpm because of the temperature and my three-tank configuration.

An F-14 crew on the flight deck reported that I had flames coming out of my left engine. Inside the aircraft, I didn't have any fire warnings and had already secured the throttle for that engine. I took no further action as the flames had been a by-product of the FODed motor, not an engine-compartment fire.

I slowly climbed out ahead of the ship concerned about the reliability of the remaining engine. The divert field was about 150 miles away, and I was already at the single-engine dirty bingo fuel state.

I called the tower and told the Boss I was starting my profile to the beach. Shortly thereafter, the captain of the ship contacted me on tower frequency, asked the status of my aircraft, and instructed me to turn downwind. In a strange way, I was relieved because I was not sure my right engine was going to keep running for another 150 miles. I felt better about the possibility of ejecting near the ship, instead of 10 miles short of some foreign divert field.

I began my turn and reviewed my single-engine emergency procedures. I was surprised to find that I had already, without a conscious effort, raised the flap switch from full to half. I now know why boldface procedures are so critical to safety.

My skipper was the next person to call me. He asked if my fuel tanks were still on the aircraft. I said that they were, but my climb rate was quite poor.

"Get rid of them," he said.

As the tanks were the only stores on the aircraft at the time, I pushed the emergency jettison button, and they were gone. This obviously improved the performance characteristics of the normally underpowered Lot XIV Hornet tremendously.

During these discussions and jettison procedures, my original flight leader had joined me to check out the damage. He approached from the left and examined that side of my aircraft. He began to cross under to examine the other side, then reversed his direction and crossed over me to keep from getting hit by any of the debris falling from my jet. I thought that was a bad sign.

He reported the following damage: the bottom half of the left intake was seriously deformed, and the aft two retaining bolts were the only fasteners securing the FLIR to the jet. A few small chunks had been taken out of my port trailing edge flap and port stabilator. Two port gear doors had either been damaged or completely separated from the aircraft. All of this had been caused by the collision with the tail of the Intruder.

On the starboard side of the aircraft, a very large section of the trailing edge flap had been damaged by what was later determined to be the highest portion of the Intruder's folded wings. There was also minor damage to the starboard stabilator. Both of the landing gear struts appeared to be intact, although there were several pieces of A-6 stuck to them.

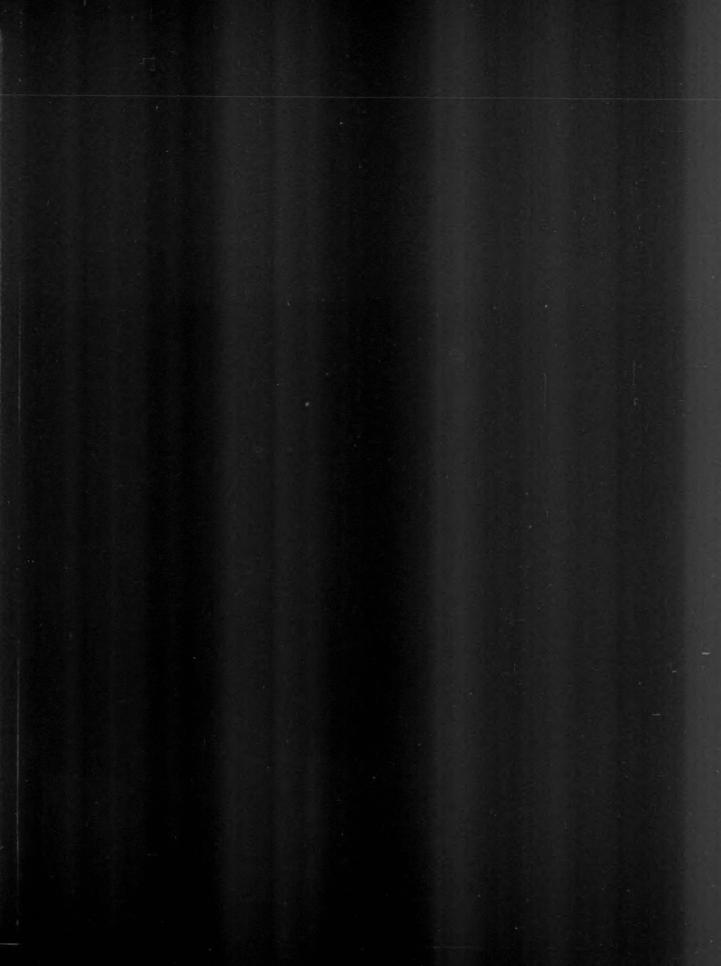
Finally, he said a long metal tube of some sort was streaming from my tailhook that had passed through a large portion of the Intruder's horizontal tail and precisely through the center of the vertical tail.

Looks like it's my turn to test the barricade, I thought. The Air Boss asked me to extend my downwind leg to 10 miles while a FOD walkdown was performed on the flight deck. I was abeam the ship but couldn't see the activity on the flight deck because of the haze. As an LSO, I was expecting to hear a 10-line barricade brief but never got one. Even in all the excitement, that seemed a bit strange.

As I turned final, I called approach control and asked for ACLS needles. They complied and began sending approach symbology almost immediately. At three miles, as I began my descent from 1,200 feet, I was still puzzled by no mention of the barricade I was preparing to take but assumed that I'd get some gouge around the ball call.

"Three quarters of a mile, on and on, call the ball," instructed approach control.

"Three Oh Four, clara, single-engine," I replied. The visibility was just as bad as it had been during my first Continued on page 28.



## Pap-ups

- New Flight-Mishap Videos
- HABD Replaces HEED
- \* New Cold-Weather Gear
- New GPWS Warns Pilots Before CFIT



#### New Navy Videos Recreate Recent Flight Mishaps

Working with the Naval Media Center, the Naval Safety Center wrote, filmed and distributed two videos that analyze recent Class A flight mishaps.

One is about a CH-46 that got into a dangerous flight mode during a NATOPS check ride. The Safety Center sent the video to all rotary-wing squadrons and all wings last June. The other film was about CFIT (controlled flight into terrain), mailed out in September.

The videos use new footage, animation and scenes in simulators to describe the mishaps. Squadrons can use the 10-12-minute videos during AOMs, training or stand-downs to review lessons learned.

The Safety Center and the Media Center are producing three more films. One involves a Tomcat pilot who lost situational awareness and became disoriented after a high-performance takeoff into instrument conditions. The second shows Hornet CFIT during low-level training in the mountains. The third, a Class B flight mishap, involves a wire-strike on a low-level.

Copies of these videos will go to fixed-wing squadrons and wings. Extra copies will be sent to the Navy Postgraduate School for students in the ASO course.

The Safety Center welcomes feedback from the fleet about the value of these videos. Call either John Cataldo at 757-444-3520, ext. 2650, or Derek Nelson at ext. 7244.

#### Better Emergency Breathing Device to the Fleet

A new breathing device is replacing the SRU-36/P Helicopter Emergency Egress Device (HEED). Since 1987, HEED has saved nearly 100 personnel after crashes at sea. Now an improved device, the SRU-40/P Helicopter Aircrew Breathing Device (HABD), will be used by crews on helicopters, E-2s and C-2s.

West Coast Marine Corps helicopter squadrons are the first to receive the HABD. East Coast Navy and Marine Corps helo squadrons will get it during the first quarter of FY99.

SRU-40/P is more compact and easier to use than its predecessor. It gives one to three minutes of air, depending on the rate of breathing, temperature and depth of the water. It's a 3,000-psi aluminum cylinder compared to the HEED's 1,800-psi unit. It's manufactured by U.S. Divers Co., San Diego.

Unlike its predecessor, the HABD has a 20-inch flexible hose with a silicone mouthpiece, which means users can move their heads through a greater range of motion. Also, the new device is easier to store.

#### Better Cold-Weather Gear on the Way

To improve protective clothing, the Navy continually tests and evaluates cold-weather wear for insulation and flammability. Helicopter, TACAIR, patrol, and cargo squadrons routinely engaged in cold-weather operations further test the items to make sure they are suitable.

The items listed below have met Navy and Marine Corps requirements and work better than several items now authorized for fleet use:

Cold-weather boots—Defense Supply Center Philadelphia is procuring Safety Toe, a new cold-weather aviator's boot scheduled to be available in the Federal Supply System by February 1999. Meanwhile, Goretex boots are authorized alternatives.

Foot care—Antiperspirant foot spray or powder containing aluminum chlorhydrate is available in drug stores and is recommended to minimize perspiration.

Slip protectors (Spiky and Spiky Plus)—They slide on to cover the sole of the boot and are only used outside an aircraft to give better traction on snow and ice. Spiky has steel spikes in the toe area, while Spiky Plus has steel spikes on both the toe and heel.

**Boot water sealants**—If the work area is very damp, Sno-Seal is particularly effective. It requires using a hair dryer or other heat source in the sealant process.

Gloves—HAU-14P is the cold-wet protective flyer's glove now in the procurement process. It should be available by April 1999. The HAU-15P intermediate cold-flyer's glove, also being procured, should be available by January 1999.

The Naval Air Warfare Center Aircraft Division (NAWCAD) conducts the cold-weather clothing program, which is sponsored by OPNAV (N880G4) and under the acquisition management of COMNAVAIRSYSCOM (PMA-202). Point of contact: PRC(AW/FPJ) John Heck, coordinator for fleet indoctrination for survival flight equipment, NAWCAD PAX, DSN 342-9206.



#### **Navy Developing Terrain Warning**

Mishaps involving controlled flight into terrain (CFIT) killed 179 naval aviators and destroyed 75 aircraft from 1986 to 1995. The Ground Proximity Warning System (GPWS) assesses the aircraft's current situation and provides voice warnings or visual cues if the aircraft enters a potential CFIT situation. GPWS is not supposed to change the way a pilot flies, but rather to warn him if he is close to hitting the water or ground. GPWS then indicates what action should be taken.

The Naval Air Systems Command's Program Manager for Air Combat Electronics (PMA-209) is responsible for developing and fielding a workable, cost-effective GPWS for Navy and Marine Corps aircraft, tailoring a unique solution for each aircraft type. The approach used for the FA-18 and AV-8 was embedded software developed by a Navy test team and integrated into the aircraft's mission-computer software. Some Hornet and Harrier squadrons are flying with this GPWS now. More hardware manufactured by Cubic Defense Systems was the choice for the H-46 and H-53. H-46s and H-53s are currently in flight test, with fleet introduction scheduled for early 1999.

An off-the-shelf system from Allied-Signal Corporation, with some modifications, will be used for the on-going C-130 GPWS program. New starts for FY99 include VP-3, C-2, CH-60 and the SH-60R. New starts planned for FY00 include S-3,V-22, UH-1Y, and the AH-1Z.

PMA-209 wants to gather experiences with GPWSs and CFITs in general to determine the benefits as well as the drawbacks of the existing GPWS. Identifying or confirming that GPWS has helped save an aircraft is not always reported at the postflight debrief. However, safety officer reports, Anymouse reports, or even a confidential pilot report could help substantiate the current GPWS development approach or provide insight into future GPWS development.

For more information, e-mail: gpws2@mfs2.nawcad.navy.mil, or visit website: http://mfs2. nawcad.navy.mil/gpws or phone Bill Wescoe (PMA-209L), Patuxent River, MD: 301-757-0906.

Edited by Bud Baer. Contributors can contact him at (757) 444-3520 Ext. 7246 (DSN 564). E-mail address: hbaer@safecen.navy.mil

#### Ailestones

Class A mishap-free flight hours

| Command  | Date     | Hours   | Years |
|----------|----------|---------|-------|
| HMLA-775 | 01/22/98 | 15,000  |       |
| VP-45    | 06/02/98 | 186,000 | 29    |
| VP-30    | 06/10/98 | 334,000 | 34    |
| HMM-774  | 06/30/98 | 55,000  | 28    |
| VMGR-452 | 06/30/98 | 35,000  |       |
| VAQ-132  | 07/05/98 | 46,000  | 28    |
| VS-33    | 07/20/98 | 10,100  |       |
| VP-16    | 07/26/98 | 223,000 | 33    |
| HSL-51   | 07/29/98 | 40,000  | 6     |
| VP-26    | 08/02/98 | 266,000 | 36    |
| HMM-268  | 08/02/98 | 65,000  |       |
| HMT-301  | 09/08/98 | 107,000 | 23    |

#### Mishaps

The Navy and Marine Corps had 24 Class A flight and flight-related mishaps before 18 July in FY98. The following mishaps occurred since 18 July:

| Aircraft                             | Date                           | Command Fat:                                                        | alitie |
|--------------------------------------|--------------------------------|---------------------------------------------------------------------|--------|
| FA-18A                               | 07/18/98                       | VFA-87                                                              |        |
| A Hornet had                         | l engine failure ar            | nd an engine-bay fire during straight a<br>feet and crashed at sea. |        |
| UH-1N                                | 07/23/98                       | HMM-262                                                             |        |
| A Huey crash                         | ed into the grou               | nd during a routine training flight.                                |        |
| F-14B(2)                             | 07/30/98                       | VF-103                                                              |        |
| A pair of Ton                        | neats collided in t            | Right.                                                              |        |
| F-14B                                | 08/08/98                       | VF-32                                                               |        |
| A Tomcat cra                         | shed into the wa               | ater while in the CV-landing pattern.                               |        |
| SH-60B<br>A LAMPS held               | 08/08/98<br>o had an in-flight | HSL-48 emergency and ditched at sea.                                |        |
| T-45A<br>A Goshawk w<br>the port bow |                                | VT-22<br>swerved right during a bolter and str                      |        |
| FA-18C                               | 08/20/98                       | VMFA-212                                                            |        |
| A Hornet cra                         | shed during a nig              | ht-bombing mission.                                                 |        |
| T-34C<br>A Turbo-Men                 |                                | STRKFIGHTWPNSCOLANT the ground during a training mission            |        |
| S-3B                                 | 08/31/98                       | VS-41                                                               |        |

#### Class A Flight Mishap Rate

|              | No. | Rate  | No. | Rate |
|--------------|-----|-------|-----|------|
| Navy/Marine  | 33  | 2.31  | 26  | 1.78 |
| All Navy     | 24  | 2.21  | 14  | 1.26 |
| All Marine   |     | 2.65  | 12  | 3.47 |
| NAVAIRLANT   |     | 3.03  |     | 1.68 |
| NAVAIRPAC    |     | 2.28  |     | 1.58 |
| MARFORLANT   | 3   | 2.74  |     | 5.37 |
| MARFORPAC    |     | 3.72  |     | 3.64 |
| NATRACOM     |     | 1.50  | 4   | 1.17 |
| NAVAIRES     |     | 0.00  | 0   | 0.00 |
| 4th MAW      |     | 0.00  | 0   | 0.00 |
| NAVAIRSYSCOM |     | 6.61  |     | 0.00 |
| NAVSTKWARCEN |     | 11,85 |     | 0.00 |
|              |     |       |     |      |

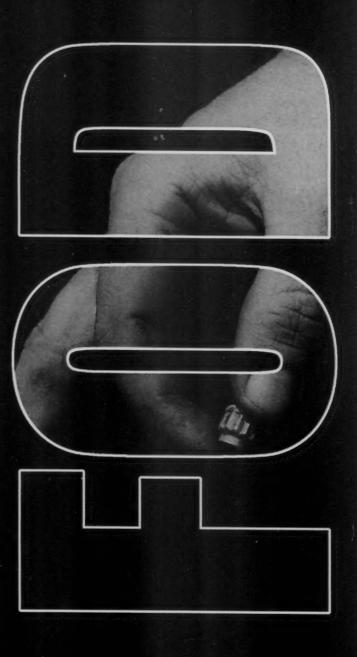




Tear out this insert! Post this newsletter until it's old news.

# SWEAL SIMELER STUDIES







Visit our homepage: www.norfolk.navy.mil/safecen (757)444-3520 (DSN 564)



### EBRG? Whats That?

#### by Lt. Jack Van Natta

battlegroup work-up cycle and were still ironing out the kinks.

The airplan for our quadruple cycle hop (yes, some people still do them) included an EMCON recovery. We were confident and ready. Before our E-2C-controlled recovery, we felt we had covered all our bases. The crew had obtained side numbers, weather, altimeter and expected base recovery course (EBRC)—or what we were told was an EBRC.

We began marshaling our air wing. Still, something did not seem right. When we requested the EBRC again, it was 180 degrees out from what we expected because of the winds.

I asked the ship three times to repeat the EBRC. After three identical responses, I was satisfied we had the correct information. The mission commander made a fourth call, and I remember this vividly, "If at any time the BRC changes, you let us know. It is a safety of flight consideration." The response was an immediate, "Roger."

As the aircraft began heading toward the carrier, things seemed fine. However, there were two aircraft that did not seem to be correlating the information we were passing (i.e. they were more than 60 miles from the marshal point showing little desire to make it there on time). Our radar was down for this flight so we were only using IFF tracking. As we

watched the last aircraft's IFF blip leave the marshal stack on time, we began patting ourselves on the back for a job well done.

After we landed, we got a phone call from one of the pilots in an aircraft that needed vectors to his push point. He was happy to get help, but he wondered why the BRC we had passed was 180 degrees out from what the ship was heading. This made the hair on the back of my neck stand up. We had been recovering aircraft directly into aircraft launching EMCON. This phone call was the first indication that our EBRC was 180 degrees off.

No one on the ship made an effort to change the BRC information. This would have changed our entire game plan. At least two recovering aircraft on their way to the marshal point saw mother turning to a different heading. This fact should have been passed to us as well. Without the updated BRC that the ship should have provided, a single call from one of the two confused pilots would have alerted us that mother was turning from 120 to 300 degrees.

We could have had multiple midairs during this recovery. This was a case of trying to run before you can crawl. The ship had not seen an EMCON recovery for more than a year. Some people in combat didn't even know what EBRC meant.

Lt. Van Natta is an NFO with VAW-117.

UR CONFIDENCE AND EXPECTATIONS WERE HIGH during a JTFEX, our final at-sea period before steaming east. We'd spent nearly six demanding months at sea during the previous year and had gotten through all the pitching decks, low visibility, stormy nights, and the usual bucketful of nuggets without a single landing mishap.

The scripted hostilities were intensifying, and our tired aircrews continued to press the fight. CAG wanted the squadron LSOs to fly, fight, sleep, and eat, although he never specified the priority or frequency, so he banished them from the platform and left the waving to us, his keen-eyed, smooth-talking staff LSOs.

There were four of us because we were in the middle of a turnover. Sad but true, our two unfortunate senior paddles were going to miss the upcoming summer Med cruise. At least with four LSOs, we could rotate duties every 24 hours. Jokes about "three blind mice" would also be at a minimum.

This trying exercise began exact-

ing a steep toll. The next 10 days

vielded a trio of tragedies. The

first was a heart-stopping F-14

hook slap. Next came a spectacular

FA-18 crash on the flight deck; a

mounted on a wing tip engaged the

cross-deck pendant after an aggres-

sive line-up correction at the ramp.

mainmount collapsed, and the missile

deck of a small boy on the storm-tossed seas. One day the sinking barometer and darkening skies confirmed that the weather-guessers' tea leaves were right. The brisk 55-degree temperature rapidly turned

Finally, we lost four shipmates when following a waveoff their H-60 crashed onto the pitching, heaving

unpleasant as the occasional sprinkles became sockdrenching diagonal sheets of bone-chilling rain. Uncooperative winds randomly gusted from 15 to 42 knots.

CAG was the first one down the chute, penetrating the ink-black rain squall to minimum descent altitude until he arrived with a vertigo-induced, OK 1-wire pass.

A little later in the recovery, we bingoed a low-state FA-18 pilot when he arrived "clara" everything until the inclose position. His exaggerated power response led me to conclude he didn't want to cash in his SGLI tonight. He skimmed across the water-laden nonskid and disappeared into the turbulent night just as quickly as he had appeared.

Our water-soluble, solar-powered LSO station began to degrade rapidly. Rain obscured both the HUD and PLAT repeaters. Both channels of CCA Final didn't work. The "whiskey" radios were transmitting, but we could

not receive. CATCC and tower told us that the struggling aircrew could hear us and relayed their "ball" calls so we could offer a "Roger, ball," in the blind.

Then came the War Hoover. This S-3 pilot was sweating through his second attempt after being waved off for not responding to our calls

> the first time. He was at 3/4 of a mile so we rogered his reported ball call. Meanwhile, the controlling LSO

tried to determine if the phone talker heard the roger ball. While distracted with that, we heard the Boss's thundering voice over the 5MC: "He's clara, Paddles." I jumped in and began giving glide-slope and line-up calls as back-up LSO—actions that implied a lead change.

As the disoriented pilot reached the in-the-middle position, he started making aggressive lineup corrections for non-existent deviations. I thought we had another lead change for line-up control when the controlling LSO called, "Right for line-up."

Meanwhile, our overtasked aviator responded with a momentary pause on centerline before he dropped his right wing 20 degrees and picked up a rapid drift to the right.

Some 40 feet off centerline and bouncing through the in-close position, he made another exaggerated wing dip, this time to the left. I responded hastily with two "Level your wings" calls as he picked up a dangerous right-to-left drift. But the leans had the best of him.

In a desperate attempt to sense the horizon, he grossly overcompensated with a 25-degree bank as he whistled over the ramp.

In a flash, he dragged his wingtip across the flight deck, narrowly missing the very same wire the Hornet had snared just a few days earlier. We stood paralyzed in the driving rain, stunned by the realization that we couldn't guarantee an uneventful recovery, even for this this experienced aviator. I watched in disbelief as the crippled Hoover limped into the angry black sky, forced to endure an arduous divert and a late-night instrument approach to field minimums.

I take half of the responsibility for anything that happens during aircraft recoveries every time I step onto the platform. I also know that culpability shifts to the left or right once all the facts are extracted. Realizing that, we discussed some unforgiving lessons during our next LSO training day.

Don't let the pressure to get someone aboard cloud your judgment or shift your waveoff window. If conditions are bad, never assume the other LSO will wave off someone, no matter what that pilot's capabilities are. One major or two significant deviations for glideslope, lineup or airspeed should always generate a waveoff. Be as sensitive to gross line-up deviations as you are to glideslope deviations.

The "big uglies" can strike at any moment regardless of how much experience you have with pitching decks and foul weather.

The LSO station should be 100 percent capable. Put the "Shoes" on report if it isn't.

As aviators, the rules still apply during "varsity" nights, especially the ones about limiting the magnitude of the corrections for deviations as you get closer to the ship.

There is no such thing as an implied lead change on the platform. Keep the aircraft on centerline at all costs if you are the backup LSO.

LCdr. Silkey was CVW-8 paddles when he wrote this article. He is now with the Navy Flight Demonstration Squadron.

# e Big Uglies

dragged his wingtip across the flight deck, narrowly ry same wire the Hornet had snared just a few days earlier. The first pass definitely showed something metallic on the ground surrounded by fire, so I went in again, this time with the other Sea Ranger in tow to confirm what I was seeing.



# Spect Turbo

by Lt. Jeffrey B. Barta

CTUAL SEARCH-AND-RESCUE MISSIONS are rare, especially in the training command with a student naval aviator onboard. Sometimes, however, such flights are unavoidable. I had my one experience with SAR in the training command.

It started out as a good-deal hop: completing the SNA's syllabus on a Friday night by heading down to Santa Rosa OLF for some night nav and approaches, then home early for the weekend. The student had flown all her required night time, so a few trips around the pattern would be all that was required to get the X.

Santa Rosa OLF lies only a mile or so west of Eglin AFB's restricted area. It was very active with the sights and sounds of Hurlburt Field's AC-130 Spectre gunships filling the sky with fire from above.

Halfway into our planned six trips around the pattern, the call went out over guard for all TraWing Five aircraft to call their bases and muster. The SDO said that a civilian in the area had reported seeing an orange-and-white aircraft go down in flames, and as one of only two helos up that night, could we check it out? A quick look at my fuel gauge showed plenty, so I acknowledged and contacted Eglin.

As with any SAR, initial information was sketchy and unreliable. My student and I spent the first 20 minutes following crazy vectors from anybody in control with a

# Tormentors oat-Ropes

radio. Finally, we received a hard datum. My enthusiastic SNA set a bingo, and, to my surprise, set up the RNAV for the datum search, (SNAs usually aren't allowed to learn such instrument skills, as it takes away from learning more useful skills like dealing with a failed card, or boost-off NDB holding.)

We proceeded inbound and learned that we had another TH-57C, an AC-130 and a T-34C to aid in the search. The gunship took over as on-scene commander and stayed high, searching with his various optical sensors, placing the "TurboTormentor" at midlevel and the two Sea Rangers down low.

We entered the search area and saw something burning on the ground. We decided I would go low to investigate. Screaming along at treetop levels in a TH-57 during the day is everybody's idea of fun, but without Doppler or a coupler at night, to say that the pucker factor was up is a wee bit of an understatement. I told my SNA to back me up on the gauges.

The first pass definitely showed something metallic on the ground surrounded by fire, so I went in again, this time with the other Sea Ranger in tow to confirm what I was seeing. Rolling inbound, it was obvious this wasn't our downed bird, but a campfire from a bunch of poachers on the reservation. Dash 2 confirmed this, and the OSC immediately vectored us to another datum. Same scenario, same results.

By now, everybody and his brother who was airborne was coming over to gawk or get in on the action. The skies were definitely full. Another TH-57 showed up to take OSC while the Spectre diverted for fuel. Another datum, same result-campfires. Before we could get vectored onto another campfire and cheat death yet a fourth time in increasingly busy skies, Dash 2 and I decided that it was bingo time, not just for fuel, but for survival as well-time to leave it to someone who did it for a living. Besides, it was becoming obvious talking with Eglin that the gunships had been using flares that evening right on top of datum (hadn't I seen them earlier?) and that any further searching would only continue the goat-rope. Of course, the Air Force SAR coordinator didn't like anyone bugging out for such reasons, but hey, who's in charge of my helicopter?

We returned home and talked about it the following Monday, thanking each other for being the other's conscience and knowing when to say when. My SNA got an AA for crew coordination and the flight of a lifetime. As it turns out, we were right. The fire in the sky had come from the Spectres, and the Florida Department of Fish and Game got it's daily bag of poachers.

Lt. Barta was an instructor in HT-8 at the time of this story. He now flies SH-60Bs with HSL-47.



While deployed to U-Taphao, Thailand, for Cobra Gold 98, this KC-130F crew was flying a cargo mission to Khorat AB. After completing the overhead break, they dropped the gear and lowered half-flaps. Approaching short final, the copilot, Capt. Peterworth, saw the No. 2 utility hydraulic light illuminate, followed by the lights for the No. 1 utility hydraulics and the utility-suction boost pump. After waving off, the crew secured the utility hydraulic system and began troubleshooting.

Circling at 2,000 feet MSL overhead the field, Capt. Peterworth and Sgt. Mendoza, the FE, checked NATOPS. Cpl. Campmen, the flight mechanic, reserviced the utility hydraulic system's reservoir.

They then turned on the utility-suction boost pump, which was followed by a small drop in the hydraulic fluid level. Once the level remained steady, they turned on the No. 1 utility hydraulic pump, but the reser-

voir depleted in three seconds.

The crew again secured the No. 1 pump and suction-boost pump and reserviced the reservoir. They repeated these procedures for the No. 2 system, with the same results. There appeared to be a break in the hydraulic line on the output side of the enginedriven pumps. Without the utility hydraulic system, nosewheel steering and normal brakes are lost, along with the ability to raise or lower the gear or flaps normally. Declaring an emergency, the crew received clearance to return to U-Taphao.

En route, Capt. Peterworth noticed the left main gear's indicator had barber-poled, without an accompanying light in the gear handle. Although the crew was fairly certain the gear was down-and-locked, Capt. Murphy decided to chain the landing gear down as a precaution.

In the delta patter overhead U-Taphao,

Sgt. Suffren, the loadmaster, and Cpl. Campmen chained the gear down while the flight-deck crew briefed a landing without nosewheel steering and emergency brakes. Once they had chained the gear, selected emergency brakes and turned on the auxiliary hydraulic pump, Capt. Murphy, the aircraft commander, set up for a 10-mile final. he made a 50-percent flap, visual approach to U-Taphao's runway 18.

At touchdown, the FE reversed the throttles as the aircraft commander maintained centerline control with asymmetrical thrust and differential braking.

Postflight revealed the source of the hydraulic leak was a failed clamp on the hydraulic line to the nosegear uplock. The unsafe-gear indication was not related to the leak. The grounding wire had also come loose during the return flight to U-Taphao.

Lt. James A. Rossi

#### VFA-106

Lt. Rossi was the senior LSO during an FRS CQ. He saw a possible problem with the fresnel lens while he waited for his students to launch. With an EA-6B on short final, he quickly checked the platform repeaters, all of which indicated a clear deck. Still not convinced the lens was

set correctly, Lt. Rossi told the controlling LSO to wave off the Prowler.

Further investigation revealed the lens was tilted excessively and would have flown the Prowler on a dangerously inaccurate glideslope without showing any erroneous indications to the crew.





The crew of Leroy 23 was preparing for blue-water, low-light level NVG CQs aboard USS Wasp (LHA 1). After turnup, Maj. Clark the HAC, called for the takeoff checklist. Capt. Waldron, the copilot, crew chief Cpl. Sannar and LCpl. Lea, the aerial observer, did the takeoff checks. The crew called tower to report fuel and people on board, and the Air Boss cleared the CH-53E into the Charlie pattern.

With a green deck and the LSE signaling to lift, Maj. Clark pulled power to break the deck of the ship. As the helo lifted into a hover, the crew heard a loud bang, which seemed to come from the bottom of the aircraft. LCpl. Lea checked the deck of the ship and saw the nosewheel and strut had blown off the helicopter onto the deck. Maj. Clark told the Air Boss, who quickly coordinated the recovery for the crippled Sea Stallion. Maj. Clark discussed the problem and options with the crew.

The Sailors of the Wasp's deck crew and the Marines of the ACE worked together to help recover the CH-53E. The aircrew kept the helicopter in a precision hover for 20 minutes over the flight deck, while the deck crew prepared spot 7 with mattresses (a common practice to recover a CH-53 that is missing a nosewheel or has a hung nosewheel). Once the deck

was ready, Cpl. Sannar and LCpl. Lea talked Maj. Clark over the spot, positioning the nose over the pile of mattresses.

With the mainmounts firmly on deck, and the nose in a steady hover above the mattresses, Maj. Clark had Cpl. Sannar and LCpl Lea get out, as they had briefed earlier. Cpl. Sannar moved in front of the aircraft where he could better direct his pilots in bringing the nose to rest on the mattresses. Cpl. Sannar and LCpl. Lea then helped the pilots with a no-rotor brake shutdown and supervised the deck crew as they secured the Super Stallion to the deck with chocks and chains. Damage to the aircraft was minimal.

## Who Caught th

cruise had been anything but uneventful. A thick, persistent haze had forced day CQ into Case III

by Lt. Mark Light

operations for two days.

This haze made moonless nights especially black with no horizon. Then a Tomcat went into the water off cat 1, bringing the second night's ops to an early conclusion.

Since our Hummer was on deck refueling when the mishap occurred, we got a bonus night on the boat. The topic of discussion at midrats was, of course, the Tomcat. The crew ejected successfully, and the informal Aircraft Mishap Board known elsewhere as the JO wardroom was busy exchanging ideas

about what

might have

caused the

F-14 to settle into the water after the launch. Cold cat? Insufficient endspeed? Engine failure? Vertigo? Or were the fighter guys just tired of their aging "alphas" and ready to trade up to a newer airframe?

Now, it didn't matter. That day was over, and we were in our trusty Hawkeye ready to launch back home for one final afternoon of last-minute errands before the fly-on. We were on cat 4, and the sequence was normal. Spread the wings, leave flaps at 20 degrees. Roger 47,000 on the weight board. Here is tension—heels to the deck, parking brake

checked off. Let's see, circuit breakers all in, hydraulics good,

rs all frauod,

trim set, flaps 20, max rudder 20. Engines are good, let's go.

Because we were on cat 4, I had the copilot salute. His left hand was on the glare shield, he saluted with his right, and we were off.

As we left the deck, I noted 110 knots not much excess endspeed, but certainly safe for flying. I rotated and raised the gear, but all was not well. Instead of a normal 18

After the Tomcat last gasped a collective

## e Flap Lever?

to 20 units AOA, I was looking at 25, nearly rudder shakers. The flight deck was above us, not below us, and getting higher. After the Tomcat last night, the entire ship gasped a collective "Oh, no, not again!"

I checked the power; it was good on both motors. I gave them an extra shove for mom and the kids, but they were already at the stops. I rechecked the gear handle up, then reached for the flap handle and threw it full down, in a last-ditch attempt to get lift and stay dry. That is when my heart skipped a beat. To my horror, instead of going one

Me

click, the handle moved three clicks before hitting the stops at full down. Somehow, we

had taken the shot with our flaps up!

Neither my copilot nor I know how the flap lever was moved. The final checkers said they saw our flaps start to move just after the shooter signaled to launch, and they could not suspend the shot in time. The only explanation is that one of us bumped the flap handle. I had more than 2,000 hours and 400 catapults in E-2s and C-2s, and he had more than half that, with no such incidents.

Lessons learned? First, there is velcro on the cuff of a flight suit for a reason. Neither of us had the cuffs cinched up. Apparently, one of us hooked the handle with his sleeve after we saluted the catapult officer.

Second, you don't always have time to think before you act, and the end of the cat stroke is one of them. In our case, I didn't have time to scan every instrument to figure out why we weren't fly-ing. Getting the flaps down saved our aircraft and our lives. Rehearse in your head before each flight what to do if something goes wrong in a time-critical phase of flight. Mom and the kids will thank you. Lt. Light

flies with VAW-115.

night, the entire ship 'Oh, no, not again!"

#### by Lt. George M. Perry

IKE IT OR NOT, FOR THE DURATION OF THE CATAPULT stroke, you're simply just a passenger. If something bad is going to happen, it will most likely happen close to the water. And that's where my story begins.

As a first-cruise nugget with 100 traps under my belt. I was scheduled as an escort for a strike package during a joint exercise with the Omani Air Force. It was hard to be excited about the mission because only a few days earlier, a good friend had died when he crashed his Hornet. Investigators determined it was a CFIT incident. The euphoria of being on cruise and having the time of my life was shattered by this mishap.

The mishap made me take stock of my flying habits and mental preparation. The night before my flight, I sat in my stateroom, reviewed all my boldface, and thought at length about various emergency situations and how I would handle them if (or when) one occurred.

That morning the brief went smoothly and after reading the aircraft discrepancy book, my RIO and I walked on time for our scheduled launch. After man-up and start, I sat patiently waiting for my turn on the catapult.

After a few minutes of sitting on deck at idle, I sensed a slight vibration coming from somewhere behind me, but just as quickly as it had started the vibration was gone. A quick scan confirmed all instruments checked 4.0. We completed our takeoff checks, and I reviewed aloud the single-engine takeoff and emergency egress procedures. We selected hot mike, and I moved the F-14 slowly forward onto the cat track. I moved the wings forward, lowered the flaps, tested the spoilers, and checked the trim. When I was satisfied that everything worked, I set the throttles at military power after I got the signal to go into tension. Once the engines had stabilized and with the shooter's signal, I selected zone 5 afterburner. With both motors roaring behind me, I checked all my instruments and flight controls. Up to this point, everything appeared normal.

With a salute, the shooter looked one last time at the final checkers, who each gave a thumbs-up. The shooter turned forward, knelt down and touched the deck. Precisely at this moment my port hydraulic pump exploded. The catapult petty officer, who actually presses the button that releases the steam and fires the catapult, went through the motions of looking forward, looking aft and then pressing the button that sent my RIO and I hurtling down the cat track in a stricken jet. He hadn't seen the crossed arms of the final checker signaling to suspend the cat shot.

At one mile, the LSOs noticed thin smoke coming from my port engine. It was certainly cause for concern. All my engine instruments showed normal...

From the moment the pump exploded to the time the catapult fired was only about 0.7 seconds, not enough time for the master caution to illuminate inside the cockpit. During the stroke, however, my emergency illumination panel lit up like a Christmas tree, and head down at the end of a cat shot is not where I wanted to be.

Instinctively, I went through my single-engine procedures at the end of the cat shot, making sure the jet was going to fly away from the water. I stopped short of jettisoning the external stores because the jet flew rapidly away from immediate danger.

Once I was reasonably sure we were flying and had passed a safe altitude, I looked at my engine instruments and discovered that my combined-hydraulic gauge read zero. Also, with the landing gear handle in the up position, I still had three down-and-locked on the landinggear indicator. I moved the landing-gear handle to the down position and made sure the flap handle was still full down. The Tomcat was flying and configured to land. However, I didn't know that the port hydraulic pump had split in half, and the internal gearing in the pump was still spinning and banging around. We couldn't feel the vibration of the pump in the cockpit, and we had no way of knowing we were sitting on a time bomb.



My RIO told the tower about our problem and asked for an emergency pull forward so we could land. The Boss, who had seen my jet spewing hydraulic fluid all over his catapult, obliged. We turned downwind and reviewed the PCL for procedures and cautions.

Once we had a ready deck, I set up for a 3-mile straight-in. All the while, the shattered hydraulic pump was still spinning furiously, rubbing metal against metal and getting hotter and hotter. At one mile, the LSOs noticed thin smoke coming from my port engine. It was certainly cause for concern. All my engine instruments still showed normal, minus the hyds, and since I was so close to trapping, I continued the approach.

I got off to a decent start and flew the ball as best I could. In the middle to in-close, the left engine began smoking heavily and flames appeared under the left nacelle. The LSOs opted not to wave me off at this point because I had the ramp made.

After sensing that I had the deck under me, I settled in for a safe 2-wire and stopped. At this point, I was just relieved to be on deck and in one piece. I had no idea of the severity of the fire burning only 20 feet behind me. As the crash crew ran toward us, I watched for someone giving the fire signal, but all I saw were a lot of wide-

eyed E-3s coming at me with hoses

I quickly shut down both engines and began to unstrap. Then the canopy started coming up and someone shouted, "You're on fire!"

I quickly finished my egress procedures and tried to kneel the jet, but all the hydraulic fluid was gone. I jumped the 10 feet to the deck and quickly got out of the way.

Once I reached a safe distance, I turned to see the aftermath of the fire. The entire left nacelle was burnt to a crisp, and the jet was covered with AFFF. After maintenance inspected the aircraft, the airframers told me that we probably would have lost it in a few more minutes. I guess it was their way of trying to make me feel better.

After completing the undignified medical process that accompanies any mishap, I thought about how lucky we had been and how that just the night before I had run through some similar emergencies in my stateroom. The lessons here are simple. First, read these articles in *Approach*, talk to your squadronmates and learn from others' mistakes and experiences; it'll make you better and safer. But most importantly, being ready for and handling emergencies should be a mindset, not if, but when.

Lt. Perry flies with VF-41.

25

#### by Lt. George M. Perry

IKE IT OR NOT, FOR THE DURATION OF THE CATAPULT stroke, you're simply just a passenger. If something bad is going to happen, it will most likely happen close to the water. And that's where my story begins.

As a first-cruise nugget with 100 traps under my belt, I was scheduled as an escort for a strike package during a joint exercise with the Omani Air Force. It was hard to be excited about the mission because only a few days earlier, a good friend had died when he crashed his Hornet. Investigators determined it was a CFIT incident. The euphoria of being on cruise and having the time of my life was shattered by this mishap.

The mishap made me take stock of my flying habits and mental preparation. The night before my flight, I sat in my stateroom, reviewed all my boldface, and thought at length about various emergency situations and how I would handle them if (or when) one occurred.

That morning the brief went smoothly and after reading the aircraft discrepancy book, my RIO and I walked on time for our scheduled launch. After man-up and start, I sat patiently waiting for my turn on the catapult.

After a few minutes of sitting on deck at idle, I sensed a slight vibration coming from somewhere behind me, but just as quickly as it had started the vibration was gone. A quick scan confirmed all instruments checked 4.0. We completed our takeoff checks, and I reviewed aloud the single-engine takeoff and emergency egress procedures. We selected hot mike, and I moved the F-14 slowly forward onto the cat track. I moved the wings forward, lowered the flaps, tested the spoilers, and checked the trim. When I was satisfied that everything worked, I set the throttles at military power after I got the signal to go into tension. Once the engines had stabilized and with the shooter's signal, I selected zone 5 afterburner. With both motors roaring behind me, I checked all my instruments and flight controls. Up to this point, everything appeared normal.

With a salute, the shooter looked one last time at the final checkers, who each gave a thumbs-up. The shooter turned forward, knelt down and touched the deck. Precisely at this moment my port hydraulic pump exploded. The catapult petty officer, who actually presses the button that releases the steam and fires the catapult, went through the motions of looking forward, looking aft and then pressing the button that sent my RIO and I hurtling down the cat track in a stricken jet. He hadn't seen the crossed arms of the final checker signaling to suspend the cat shot.

At one mile, the LSOs noticed thin smoke coming from my port engine. It was certainly cause for concern. All my engine instruments showed normal...

# Flame on Fir

From the moment the pump exploded to the time the catapult fired was only about 0.7 seconds, not enough time for the master caution to illuminate inside the cockpit. During the stroke, however, my emergency illumination panel lit up like a Christmas tree, and head down at the end of a cat shot is not where I wanted to be.

Instinctively, I went through my single-engine procedures at the end of the cat shot, making sure the jet was going to fly away from the water. I stopped short of jettisoning the external stores because the jet flew rapidly away from immediate danger.

Once I was reasonably sure we were flying and had passed a safe altitude, I looked at my engine instruments and discovered that my combined-hydraulic gauge read zero. Also, with the landing gear handle in the up position, I still had three down-and-locked on the landing-gear indicator. I moved the landing-gear handle to the down position and made sure the flap handle was still full down. The Tomcat was flying and configured to land. However, I didn't know that the port hydraulic pump had split in half, and the internal gearing in the pump was still spinning and banging around. We couldn't feel the vibration of the pump in the cockpit, and we had no way of knowing we were sitting on a time bomb.



My RIO told the tower about our problem and asked for an emergency pull forward so we could land. The Boss, who had seen my jet spewing hydraulic fluid all over his catapult, obliged. We turned downwind and reviewed the PCL for procedures and cautions.

Once we had a ready deck, I set up for a 3-mile straight-in. All the while, the shattered hydraulic pump was still spinning furiously, rubbing metal against metal and getting hotter and hotter. At one mile, the LSOs noticed thin smoke coming from my port engine. It was certainly cause for concern. All my engine instruments still showed normal, minus the hyds, and since I was so close to trapping, I continued the approach.

I got off to a decent start and flew the ball as best I could. In the middle to in-close, the left engine began smoking heavily and flames appeared under the left nacelle. The LSOs opted not to wave me off at this point because I had the ramp made.

After sensing that I had the deck under me, I settled in for a safe 2-wire and stopped. At this point, I was just relieved to be on deck and in one piece. I had no idea of the severity of the fire burning only 20 feet behind me. As the crash crew ran toward us, I watched for someone giving the fire signal, but all I saw were a lot of wide-

eyed E-3s coming at me with hoses.

I quickly shut down both engines and began to unstrap. Then the canopy started coming up and someone shouted, "You're on fire!"

I quickly finished my egress procedures and tried to kneel the jet, but all the hydraulic fluid was gone. I jumped the 10 feet to the deck and quickly got out of the way.

Once I reached a safe distance, I turned to see the aftermath of the fire. The entire left nacelle was burnt to a crisp, and the jet was covered with AFFF. After maintenance inspected the aircraft, the airframers told me that we probably would have lost it in a few more minutes. I guess it was their way of trying to make me feel better.

After completing the undignified medical process that accompanies any mishap, I thought about how lucky we had been and how that just the night before I had run through some similar emergencies in my stateroom. The lessons here are simple. First, read these articles in *Approach*, talk to your squadronmates and learn from others' mistakes and experiences; it'll make you better and safer. But most importantly, being ready for and handling emergencies should be a mindset, not if, but when.

Lt. Perry flies with VF-41.

25

## Hov Hov Prov

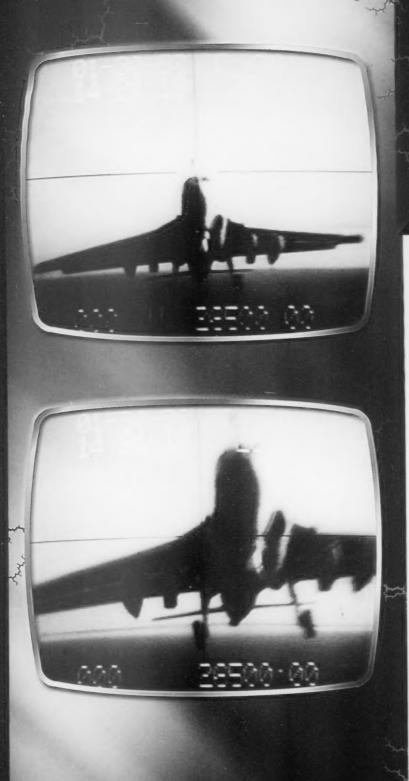
#### by Lt. John Sheehan

In fact, the ship had finally made a wrong turn and come out from under a squall line into clear air. Case I for FRS CQ! The downside was a deck moving plus or minus 15 feet with a wicked dutch roll and starboard winds to boot. Because of weather delays the previous day, the ship was behind on traps and decided to work us. All the West Coast FRSs were there, and all had a backlog of traps to complete.

Progress was slow and painful. Our launch time slid an hour as we sat on elevator 1, watching the pitching-deck waveoffs and bolters. Paddles was coaching everyone to fly their numbers to get off to a good start, listen to the glide-slope calls and be ready to fly the ball should the deck pause in its gyrations.

My instructor ECMO and I reviewed our pitching-deck brief as yet another Hornet called the ball, low state. We talked about not chasing the ball and ignoring the fantail's dance while trying to estimate the average centerline.

Back in Ready 1, we had discussed having Bullseye up on the ADI (if you ain't cheatin', you ain't tryin') but now agreed that would be counterproductive and nauseating. We rehashed waveoff procedures, day bolter and waveoff pattern as an S-3 engaged



## v to er a vier

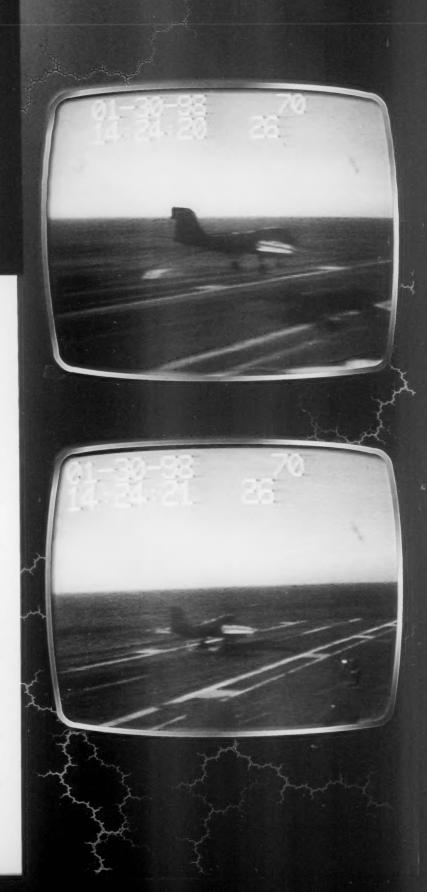
in the same activity only 100 feet away. (I heard, "You just can't buy training like this!")

Despite the impressive game of "hide the horizon with the flight deck" going on around us, we were still confident. I had more than 300 traps in the Intruder and felt comfortable with the Prowler because it has similar handling characteristics in the landing pattern. More importantly, my instructor and I had both flown during CVW workups off this same ship, in this same op area, in these same conditions two years earlier and thought we'd seen all her best moves.

After finally being called down from the low-holding penalty box, the score was three traps, three pitching-deck waveoffs and one bolter. Halfway done for today! We were feeling salty on downwind. Then we looked at the ship from the 180 and watched the bow nearly stuff itself under water.

Focused on the task at hand, we pressed on to a good start. After the ball call, the deck made a mild dutch roll up and right as paddles called, "A little power... power. Deck's up, you're on glide slope." In the next two seconds, the deck kicked wickedly to the left. I made a big-time lineup correction to try to keep up with the landing area.

"Wave off, wave off, pitching deck," the LSO called.



Max thrust, boards in and hold on-speed. We felt the jet accelerate and climb as the rounddown disappeared under the nose. But then we just stopped flying. I felt like Wile E. Coyote as he freezes in midair after running off a cliff. I always wondered if he'd really have time to hold up that little sign that says, "Yikes!" before plummeting to the deck. The answer is yes.

Things happened fast from there. The deck had heaved 22 feet, literally reaching up with the 4-wire and catching our hook as we had flown by on the waveoff. Our mainmounts were 8 to 10 feet off the deck, the jet slightly nose high as we pulled the wire out. Once our forward motion stopped, the jet nosed down as it started to drop to the deck. Just before touching down, we achieved a relatively flat attitude. The jet settled surprisingly softly onto the non-skid in a perfect three-point landing.

The view from the cockpit was not quite so peaceful. The disconcerting feeling of hovering with nothing but water visible forward or to the left rapidly brought on concerns about the strength of the crossdeck pendant, the quality of the grip the hook had on the wire, and the overall structural integrity of NJ 656. Possibly because of the odd forces associated with being snatched out of the air, my left shoulder-harness reel locked.

As we decelerated, I was thrown forward and left with my face over the throttle quadrant. Once we hit the deck, I was consciously pushing myself upright with my left hand and reaching for the lower ejection handle with my right, thinking the hook would surely bounce off the wire. Even on a big deck, there isn't much room between the end of the 4-wire run-out and the end of the angle. That 1.2-second delay between initiation of command eject to the pilot's seat leaving the jet could seem like an awfully long time.

Everything worked, though. We remained firmly in place on the angle and all the major pieces of the jet were still attached. My knees began to shake as we taxied out of the landing area. Other than severe cotton mouth and some bruises, we were OK.

As a testament to Grumman Ironworks, the hard landing and in-flight engagement inspections revealed no damage and the plane flew again. CQ was delayed as the ship sought smoother seas. The decision was made to launch only Cat II crews for the night events.

In the debrief, the LSOs told me the deck cycles had been fairly regular, except for the huge heave that came out of nowhere and caught us.

Lt. Sheehan flies with VAO-141.

#### A-6 in the Landing Area! Fouled Deck! continued from page 14.

approach. This time, however, the landing area was clear, and paddles talked me down to a safe, uneventful arrestment. No barricade, no discussion of a barricadebusiness as usual.

Postflight inspection of the starboard engine showed significant FOD damage that may have ultimately resulted in catastrophic engine failure. A timely CV recovery in this case probably saved the aircraft.

This incident produced a number of lessons learned. First, new LSO procedures have been developed to ensure the proper interpretation of the deck-status indication. Welldefined 10-foot and 100-foot minimum altitude windows have been directed for specific deck-status situations.

Second, while the tailhook performed admirably in this situation, NATOPS makes it very clear that a divert or barricade is a requirement if hookpoint integrity is in question. In this case, an F-14 with flap problems performing a straight-in approach in front of me had diverted the LSOs' attention, and they were unaware of my return until I was nearing the ball call. Obviously, there had been a communication breakdown among the involved parties as to the status of my return and the status of my aircraft.

Third, it is everyone's responsibility to advise the tower of weather conditions that warrant a launch or recovery case change. Yes, the senior man airborne is given this responsibility by convention, but all players should contribute to the decision if conditions so dictate.

Finally, immediate performance of NATOPS boldface procedures quite possibly saved my aircraft. A number of these actions, I must admit, took place without my conscious effort. My procedures for loss of thrust on takeoff were done in strict accordance with the NATOPS manual, but in retrospect, I don't recall giving a single thought to any of the procedures until after I had done them.

When all was said and done, the A-6 flew again about a month later, and my aircraft actually made the flyoff a few months later. We didn't hurt anyone or lose any aircraft in this mishap? As a result, however, a number of CV recovery procedure changes have been incorporated to ensure this type of incident never happens again.

As for me, I take some satisfaction knowing no one will ever be able to accuse all Hornet drivers of being fulltime deck spotters.

LCdr. Barger flies with VFA-34.





#### Re: "Hidden Hangover" (July '98)

Fort Greely, AK-Fabulous article! As an Army standardization instructor pilot, instrument flight examiner, and aviation safety officer, I have pushed this little-known medical fact for several years. This story is the first I have seen on the subject of how alcohol affects the inner ear. Considering the nature of our business, the information is important.

The effects of alcohol on the vestibular system are discussed in our Aeromedical Training Circular under "side effects" of drugs, but only as one of the footnotes.

Most aviators read only the bold print and leave the "unimportant" small print to editors.

Thanks for recognizing the subject's importance. Keep up the great work. All our aviators deserve the best.

CW3 Marcus Isbill, USAG, Aviation Detachment

# Office Perfect Whitecut



